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ABSTRACT

This paper advocates environmental education as a solution to environmental problems. It defines environmental education in terms of its goals; 1) the survival of man and the improvement of his life; 2) its relationship with academic disciplines and informal education; and, 3) its values and principles in relation to democracy. The main focus of the paper is on the strategies and curricula of environmental education programs, both in schools and in the community at large. The source guide and bibliography cites other bibliographies and national sources of free and inexpensive materials. (DJB)

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THE 70'S

DECADE OF ENVIRONMENTAL DECISION

Education & Action Guidelines

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OUR TROUBLED ENVIRONMENT

The problems we observe in the environment today have their origins deep in our past and present way of life. While technology has made life easier for us in many ways, it has also vastly altered the environment. Not only is quality of life reduced, but the very web of life is jeopardized. A new life style is called for, based on the requirements of living within our environment. We must develop enlightened ways of living in harmony with nature and our world. Finding the way is not merely the Government's responsibility. It is not only our neighbor's attitude and manner of living which needs alteration, it is our own.

One way to begin this new way of thinking and of living is through environmental education.

ENVIRONMENTAL EDUCATION DEFINED

Today, man has the scientific and technological "know-how" to solve most if not all environmental problems. But decisions regarding man's use of his environment are seldom based on purely scientific knowledge. Virtually all human decisions are based on custom, oversight, economic feasibility, political expediency, social desirability, or religious belief. It has now become impossible to make wise decisions about the environment without an understanding of economics, history, political science, sociology, psychology, and the humanities, as well as the hard sciences. This calls for a new educational approach, environmental education, and this in turn needs to be defined.

The Environmental Education Act of 1970, landmark legislation which reflects a national commitment to the search for enlightened life styles, has provided its own definition of environmental education. The language of the Senate report explaining the Act follows:

> Environmental education is an integrated process which deals with man's interrelationship with his natural and man-made surroundings, including the relation of population growth, pollution, resource allocation and depletion, conservation, technology, and urban and rural planning to the total human environment. Environmental education is a study of the factors influencing ecosystems, mental and physical growth, living and working conditions, decaying cities, and population pressures. Environmental education is intended to promote among citizens the awareness and understanding of the environment, our relationship to it, and the concern and responsible action necessary to assure our survival and to improve the quality of life.

As stated in the Act, and in Chapter 12 of the report of the President's Council on Environmental Quality, environmental education (EE) is a process which will affect the entire continuum of American education. It is a design for reform because it will, through every aspect of formal and nonformal education, improve philosophies of life and help each citizen to acquire a new and more viable life style.

This objective was first defined by people in local communities, and has been given the highest national priority by the President and by the Congress. Survival as a culture and even as a species may depend on environmental education.

AIM OF EE

Environmental education is a life-long process. It is a way of looking at life, fostering awareness of other life and of inter-relationships, learning to recognize the effects (good and bad) we have on physical surroundings, and the responsibilities we must accept for the mere fact of our presence and of our activities in our environment. It should enable us to make sound ecological decisions and foresee their consequences; to make value judgments, and act accordingly. It is acceptance of life values and ways of living which minimize destruction and maximize those relationships that enhance life. It is learning how to contribute to the quality of life, and the constructive use, rather than exploitation, of the environment.

It is important to understand the EE is much more than a schoolhouse approach to ending the degradation of man-made surroundings and the pollution and destruction of the natural world. Environmental education will not simply provide an understanding of pollution problems and provide the Nation with skills to meet or solve those problems. It is not merely a course in school or a curriculum combining elements of the natural and physical sciences into a new department or specialty. Nor is it just another name for outdoor education, resource management, or conservation education.

Environmental education provides alternate ways of thinking--a synthesis--which colors and affects the humanities, languages, social sciences, history, economics, and religion as dramatically as it does the natural sciences. It will give an ecological perspective for every aspect of learning.

EE VALUES AND PRINCIPLES

If environmental education is to be successful, the philosophies developed and the life styles encouraged must be predicated on values that are personally appealing and acceptable because they are themselves satisfactory, attractive, pleasant and desirable, and are harmonious with ecological principles.

Actions consistent with ecological principles include:

Recognizing and accepting personal responsibility in decision making and stewardship toward the environment, and becoming increasingly aware and concerned about those aspects of ecology which directly come within the province of each individual. (This is in contrast to "I have my own problems" or "Let George do it" or "I'm just one person, what can I do?")

Living in the environment with minimum disturbances to the rights and habitats of other living things, consistent with the health, safety and certain basic comforts and pleasures of man as the dominant species. (This is in contrast to the thoughtless or willful destruction of living things, without regard for consequences, although hunting and fishing may be appropriate as long as they don't jeopardize the species.)

Using only such resources as are required to maintain life in a balance of health and productivity permitting reproduction of the species at an optimum level, affording ample opportunity for growth of the mind and spirit, and encouraging artistic and creative expression. (This is in contrast to capricious use of resources and "conspicuous waste" in consumption beyond the manifest needs of the individual or group.)

Making use of materials and energy in the most economic manner, balancing a supposedly desirable end against other possible ends. (This contrasts with seeking immediate pleasures rather than doing without in consideration of other benefits or long-term advantages. An example is insisting on quick and speedy "muscle cars.")

These values would also include: health and safety in a pollution-free environment; privacy and quiet, with reasonable absense of persistent stress; quick, safe and pollution-free travel at moderate cost; good design in public works, reflecting freedom and openness and other human needs as well as utility and economy; employment in circumstances of dignity and with incentives; and reasonably comfortable standards of living, reflecting rewards for merit. Without question, many would also insist that living ecologically would also insure such values as reverence for life, peace, freedom from coercion and poverty, freedom in the expression of opinion and the right to learn, receiving and giving quality, value and service in business, dealing fairly and honestly in personal relationships, and having governments which are responsive and responsible to the electorate.

In summary, living consistently with ecological principles should protect and add to many important and acceptable human qualities or values.

PRESERVING FREE CHOICE

All Americans should be given the opportunity through programs of environmental education to develop ecological values that will complement the political, social, economic, and religious values that have been the basis for human decision-making processes. Changes in attitudes and behavior concerning our world and our way of life must come as expressions of individual choice, and hopefully our educational programs will provide sufficient information to create awareness of a wide range of environmentally-desirable options. Of necessity, these options must be tentative and pluralistic even after the Nation arrives at a concensus as to the more desirable environmental/ecological values and principles.

Even as the American people develop national goals, objectives and strategies in environmental education (accepting the need for evolving an enlightened philosophy of life and new life styles), our political heritage calls for two major assumptions. They are:

> Educational activity must work within the framework of local democratic government, which has as its tenet the freedom of individual choice and respect for the individual person.
>
> Efforts in environmental education will not be dogmatic with respect to existing social or religious values--or coerce behavior--but will offer alternatives. These must be in a context of balance and perspective which will assist individuals and groups in better decision making. Diversity may be preserved within a growing sense of community.

CHANGE AGENTS

Environmental education calls for an effort at basic cultural change which will be intensive for the first two decades and in the process become an integral part of all human learning. The responsibilities of EE will be shared by national, State and local governmental units, but many change agents will be involved besides the instruments and personalities of government. These will include the schools, business, industry and labor, museums, parks and media, peer groups, and the family.

These groups will function in response to individual leadership. The quality of that leadership will be determined in large measure by the individual's environmental literacy. It is the major challenge of EE to assure each individual of obtaining a high quality of environmental literacy.

There is no question that an environmental approach to education is underway throughout the Nation. The ethical and social foundations of EE have deep roots in the American identification of our national character with the wilderness and the frontier.

THE ENVIRONMENTAL EDUCATION CONTINUUM

Environmental education is that education which develops in man recognition of his interdependence with environment and all life, and a recognition of his responsibility in maintaining the environment in a manner fit for life and for living.

Why are so many people now concerned with the quality of the environment? Because education for many decades has failed to give priority to the study of the environment in its formal and nonformal* programs. During the past several years in which there has been noticeable environmental deterioration, curricula in every educational category and at every level have been reorganized, revised, and developed anew. These curricula have given little or no recognition of the urgency of environmental problems.

A "conservation ethic"--not to mention an "environmental ethic"--has not yet been accepted by the average citizen, the industrialist, or even the educator as a concept of primary importance. Consequently, it has not yet become an essential factor in shaping national policies or education programs.

PROGRAMS OF ENVIRONMENTAL EDUCATION

Programs of environmental education will involve the entire American educational system, both formal and nonformal. A formal educational system in this context is one which is targeted on specific student-teacher relationships, through specific curricula. A nonformal system is less definitive and structured and is directed toward the public at large, or particular segments of the general public.

The formal education system, from preschool through continuing education, will directly affect about 50 percent of the American population in this decade. Initially, the principal effort in environmental education should be that of developing supplementary materials that are designed for the traditional curricula such as English, biology, mathematics, and history. In addition,

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* "Nonformal" is deemed more explicit than the commonly used adjective "informal."

the development of new curricula applicable to nearly all teaching and learning situations should be initiated. The approach is to infuse environmental and ecological concepts into all studies which lend themselves to changing man's life style to one of harmony with his world.

Another approach for school systems might be that of developing a special environmental curriculum through which the traditional subjects would be learned. A third approach, but less desirable at the primary and secondary level, would be the creation of a new course called environmental studies.

The challenge for formal education is the establishment of curricula with relevant ecological content, presented in a way to meet the present high motivation of students. This means that we must take advantage of all opportunities to relate learning experiences to actual environmental improvement and problem solving in the community (frequently referred to as "issue orientation").

The school must divorce itself from the traditional classroom concept and expand its frame of reference to make full use of all community resources in the curriculum. Environmental study areas, museums, libraries, local businesses and industries, and local government agencies all have a role to play in formal education.

The school administrators and teachers should orchestrate these resources into a workable curriculum, rather than concentrating on classroom materials. To accomplish this, it is imperative that a close working relationship (and frequent dialogue) be established among students, educators, businessmen, union leaders, and representatives of government at the local, State, and regional levels.

This will assist in formulating educational programs and activities that are relevant to real life issues...and give students the values, attitudes, and methods they will need to solve present and future problems deriving from pollution, increasing population, growing technology, resource depletion, and other environmental issues.

Nonformal education will reach important segments of the general public (and in some cases the entire population of a locality) with environmental education programs. This will be a major responsibility of local and national media, volunteer agencies, business and industry, and other private organizations.

It is essential that both local and network television, radio, film studios, newspapers, magazines, and book publishers contribute increasingly to informing the public about critical environmental problems and their possible solutions. In addition, the

vast advertising and promotional resources of business and industry may be directed toward environmental and ecological issues.

Many private and volunteer organizations look to school facilities and personnel--as well as to the children, their parents, youth, and others directly related to the educational activities of the schools--for full utilization of the programs and activities these organizations offer. Such programs presently include square dances, spring and winter festivals, musical and dramatic productions, nature hikes and bird walks, and similar activities. In addition, museums and libraries frequently arrange for special exhibits, films, or discussions of interest to general or special groups.

Increasingly, as part of a comprehensive effort in environmental education, these voluntary and private agencies may wish to orient their programs toward EE objectives and to plan them in cooperation with local schools and colleges capable of providing assistance and publicity.

It would be desirable for a national non-profit organization to accept as its primary task the creative role of encouraging, advising, and assisting private organizations and business to orient their considerable resources in nonformal education, information, promotion and advertising toward EE objectives.

The emerging role of the local school system as participants in nonformal education should be emphasized. Everyone can recall situations in their hometowns and communities where administrative staff and teachers of local schools have contributed their talents and services, as well as the school facilities, to worthwhile community projects such as curtailing drug abuse. A vastly broadened activity of this nature is called for if all the varied educational resources of any community are to be coordinated in a nonformal EE effort.

Nonformal environmental education, sparked by local schools, may include sponsorship of seminars, briefings for businessmen and community leaders, public forums and exhibits, informational programs and contributions to media, operation of centers for volunteer activities, and development of clearinghouses for environmental information.

Correlation is the key to full utilization of community resources, and the local school system may be the best or only public agency available to carry out the responsibility.

Training Programs

The need for trained personnel in all branches of EE is critical. This includes the training of educational personnel, environmental management technicians, and orienting other professions in EE concepts.

Environmental education has emerged as the synthesis of widely diverse disciplines. For this reason, the development of educational personnel must recognize the opportunity and the unique circumstances surrounding the potentials for environmental education.

The present generation of educators faces a challenge in environmental education which is typical of this age. Frequently, students are as concerned, committed, and knowledgeable as their teachers. Through TV and other media, they may learn even faster than their teachers. This calls for a new learning-teaching style, a more informal instructional setting which is conducive to problem-solving approaches to learning, and, finally, extensive cooperation among all staff members of the school.

Teachers must be aware of environmental and ecological concepts and issues, and should be given the opportunity to develop necessary skills through in-service training programs. They should also be involved directly in the development of environmental curricula. Teacher training programs must also be redesigned to prepare new teachers for the challenge and responsibility of EE. To be effective in this new role, the teacher must render support to and be supported from three areas:

Administrators and supervisors must be attuned to the new strategies required in EE. Well prepared teachers cannot work effectively if the system does not support them. This calls for a flexibility of response from the system and from individual administrators.

The librarian must be prepared to keep the teacher informed of current, as well as new and developing resources in EE. This is a necessary link between the individual school building and the local, State, and national network of dissemination.

The paraprofessional can provide valuable support both as a direct link to the community and as an informed assistant in a variety of roles within EE. Whether these individuals function as assistants in the library, in administration, in resource centers or in the classroom, they must attain basic awareness of the broad goals and objectives of EE and of the significance of their task in the total program.

Manpower Training

Educators must be prepared to search out and consider a number of alternative paths for developing this critical manpower. Therefore, research, evaluation, and focusing a national spotlight on new, inventive, and successful programs in the field of environmental manpower development will be emphasized on concerned administrators. A leading role is being played by community colleges in developing training programs of this type.

ENVIRONMENTAL CURRICULA

Entirely new curricula in environmental education need to be developed for all grade levels. This would normally be a five-year process, but the need is immediate. Early attention must therefore be given to providing teachers with materials which can be integrated into current curricula.

While this immediate need is being met in part, curriculum development must begin on a conceptual framework suitable for 20 years or more of environmental education. This work will build upon the experiences, innovations, and recommendations of many educators. Neither the Office of Education nor any single State agency will evolve such a total program apart from contributions of many agencies, local schools, and individuals.

Toward such a synthesis, and illustrative of the curricula and curriculum materials needed, some tentative priorities and objectives may be advanced.

Tentative priorities include:

Provision of materials to be used with existing curricula for pre-school, elementary, secondary, community college, and adult education levels.

Development of materials to be used for nonformal adult education programs, including those of educational television.

Curriculum development for the secondary level, and then for other levels according to need.

Curriculum development for teacher training, including inservice training.

Tentative objectives may be considered for each of five educational levels, as follows:

Preschool and elementary. At this age level, emphasis should be given to increasing the child's perceptual level through appreciation of space and form, the more evident relationships between man and nature, and a general appreciation of nature.

Secondary. A more sophisticated understanding of ecological systems may be emphasized at this level, especially the relationship of man to his total environment. The student should also develop an increased awareness of the social, political, and economic causes of environmental problems. He will also develop at this age an understanding of the various options for remedying problems, and the implications of these options for man.

Undergraduate. Through multidisciplinary, problem-solving courses, college students should be able to relate the scientific, political, social, and economic aspects of environmental problems and to make value judgments leading to sound decisions. This will include a special emphasis on environmental/ecological concerns as they relate to traditional courses and disciplines such as history and literature.

Graduate. Professional training through specific environmental/ecological courses, training in environmental quality control, and orientation to environmental/ecological concerns for professional students in medicine, law, public administration, etc.

Adult education. Providing supplementary and refresher course in environmental and ecological subjects, relating everyday-life situations to behavioral problems and decision making which affect the environment.

ADMINISTRATIVE RESPONSE TO EE

Educators need to assess the resources available and to set goals in environmental education. Judging from current public interest, there will be a popular response to EE. Administrators may assume that they will receive support from the public in efforts to tie into national programs in environmental education.

To take full advantage of the unique opportunity offered by this general interest and support, it is essential that administrators begin by identifying the few who understand this complex subject and recruit them to assist others to comprehend the problems and the opportunities. Those who best understand the problems and opportunities are distributed throughout the country in elementary and secondary school systems, on college or university facilities, in foundations, in business and labor, and in numerous voluntary organizations. Therefore, educators should be encouraged to emphasize:

Assessment of local education resources in and out of the school system.

Development of community/State/regional plans which will reflect the major needs of the regions.

To assist planning at the local level, the Office of Education recommends that early consideration be given to:

Elementary and secondary education: supplementary materials, inservice teacher training curriculum development and demonstration projects.

Preschool, middle school, and adult education: supplementary materials and teacher training.

Public awareness (becoming more observant and sensitive to ecological problems, partly through reading, listening, and reviewing of media materials on the environment), especially for 14 and above.

Environmental manpower development (vocational and technical) at institutions of higher education awarding two-year degress. Basic environmental education courses for college freshmen and sophomores.

Introduction of environmental/ecological concepts to professions (lawyers, engineers, city planners, etc.) who will need to relate to these ideas in continuing education programs.

Additional areas of concern are in the development of educational personnel to reach professionals in need of environmental/ecological orientation; to develop an environmental/ecological consciousness in undergraduate and graduate students of the various professions; to assist in curriculum development and demonstration projects at the preschool, middle school, and adult level; to conduct programs of environmental awareness for preschool and elementary children; and to carry out retraining programs for environmental manpower technicians.

STUDENT INVOLVEMENT

For a number of years, progressive teachers and innovators--and many responsible schools and educational systems--have addressed themselves to human problems in an ecological context. They have advocated many changes and instituted many of them on a pilot basis.

First, these innovators have declared it not unreasonable for the educational community to be held accountable for their product. They also emphasized awareness, concern and involvement with everyday, "down-to-earth" problems. To be relevant to real-life situations generally meant that course content and approaches should be issue oriented. These approaches were responsive to the needs of the times.

Educators foresaw these needs and called for educational reform years ago. They did not call forth student militancy but only hoped to meet the issue of student frustration before it became urgent. Today, environmental and ecological approaches to domestic and world problems and to education have offered the "hope" which psychologists say must exist if energies are to be directed usefully.

The educational process needs improvement to meet the needs of youth today. The reason for this is that the modern youngster--physically maturing earlier, surrounded from birth by a proliferation of fact and opinion from the mass media, and increasingly aware of conflicts between an old culture and new values--is largely excluded from decision making and meaningful participation in our society.

If educators and schools do not meet today's issues, then the Nation must look on in dismay as highly active youth take to the streets in their frustration. "Confrontation" is a phenomenon which stems directly from the belief of young people that decisions affecting their lives and their future are being made by an establishment out of touch with the realities of the human ecosystem.

Young people prefer to respond positively to the all-encompassing environmental challenge. On Earth Day--April 22, 1970--many young Americans demonstrated their concern with their environment and with society by a concerted, constructive approach. Through speakers, special studies, films, and seminars they committed themselves as individuals and as a generation to solve environmental problems and to live ecologically sound lives.

COMMUNITY INVOLVEMENT

Programs of environmental action may be developed at the local level by community organizations, local governments and other appropriate organizations. Working together in a Community Environmental Education Center, many individuals may be motivated, trained, and involved. Ideally, these activities would be coordinated with educational programs. For instance, an environmental action program to measure the pollution levels of a local river system could be coordinated by a State agency, with data collection by high school students as part of their curriculum and by volunteers from community organizations, and with data analysis by the students and faculty of a nearby community college as part of a manpower training program for environmental technicians.

COMMUNITY ACTION CENTERS

A RATIONALE FOR ACTION

Effective action on behalf of the environment is a growing response to environmental problems. Action centers, ad hoc groups, established organizations and individual citizens are beginning to grasp the idea that unless they get involved, they will progressively lose their needed influence and power in the processes of environmental decision making.

Power, political or otherwise, is oftentimes like a muscle. And muscles must be used to be effective. If they are not used, men sometimes forget how to flex them. For many today in the United States, the art of politics, so necessary to the functioning of democracy, and the flexing of the political muscle seems to have been lost. Many people today feel helpless at what is seen as big, unresponsive government. People are also enraged at crime on the streets. Fewer are concerned about environmental crime.

Environmental crime, however, is a quiet kind of a crime, quiet violence, not at all equated with crime on the streets in the minds of many. Stopping it will require employing "new" implements which can eradicate it--namely, inactivating latent political skills which can in turn move "big government" in favor of the individual, in favor of the person rather than the polluter. Environmental crime is also a kind of circumstantial crime with power on the side of the polluter, be it a municipality,or an industry, or whomever, simply because most citizens haven't the circumstances to fight the battle. Many citizens have not been educated to the skills of political "jujitsu", nor have they the financial resources to wage a citizen's compaign. How has this imbalance of power come about in our democratic society?

One of the most important reasons often cited is that people have placed an unexamined trust in what our government can and will do with its resources. For example, can it be realistically expected that the Food and Drug Administration protect us from all manner of additives in food, when such addatives are being placed every day in food without our knowledge or theirs? The fact is that government is large and, therefore, incapable of responding quickly to citizen emergencies. Perhaps, also, a trust of technology and the powerful economic forces which accompany it have too long been unsubjected to public scrutiny. Most are convinced that our way of life under science and technology has no equal in history. This assumption is common and understandable, given society's contemporary objectives. But it can lead to a cultural blindness, an inability to perceive real conditions through a kind of hypnosis or unwavering belief in the so-called "scientific" way of doing things. Scientific achievement is somehow linked with national pride. It has become a legend or mythology when, in fact, it is a relatively recent national concern. Since 1945 education has somehow taught that if "most scientists agree that..." whatever it is, it cannot be rationally questioned. Indirect education has led to a situation where today experts must be consulted for advice when doing nearly anything. There are several hidden by-products of this dependency on "the expert" or "the authority."

One result is that, for many, in either rural or urban areas, a feel for the land and its life has been lost. Land is now"managed" or "developed", implying that those who do the managing and developing are acting in the best interests of the land. The incomplete nature of all knowledge, including the science of land management, strongly suggests caution in the application of any management practices.

Another result is that this undue respect has, as mentioned above, carried over into areas where others have been empowered to make basic decisions about lives--for example the quality of air breathed or the kind of

food eaten. These issues should be of concern to all, and while they are not "political" in the traditional sense, they suggest questioning an allegiance to a technology which suggests which toothpaste to use, based on "scientific" facts. Citizens, educated by the media through advertising and by the government to accept their world as the best of all possible are also confounded by progress and technology. As a result they have, not surprisingly, given over, as if by proxy, many of their responsibilities as citizens of what is presumed to be a democracy.

Environmental degradation is a by-product of a citizenry indirectly misled into believing that being a good consumer and voting are the requirements for the maintenance of a good way of life. This cultural blindness leads to a permissiveness which allows both the public and private sector to pollute our air, and water, and ears, and sense of smell at everyone's expense, even their own. This is the same cultural blindness which permits people to drain marshland in the Midwest at an ever-increasing rate, while at the same time bemoaning the ever-lessening numbers of migratory waterfowl, fear the annual floods, and decry the loss of a great land their children will never see. This is the cultural blindness which will and does allow the use of incredibly dangerous radioactive materials for the production of electrical power with questionable safeguards for their wastes.

While the consciousness and political muscle may be mostly asleep, it can and must be awakened in time to allow us to survive what is perhaps one of the greatest threats to our national integrity- the quiet crime of environmental degradation within.

The capacity for the citizens of the United States to save themsevles from environmental catastrophe depends on the degree to which they exercise and begin to flex those weakened and lazy political muscles. These muscles must be flexed with an understanding of some of the mythologies which we have accepted as "truth," for example, the mythology that "progress is our most important product." People must be most important in the minds of any corporation. Secondly, large corporations must be judged on a standard of expectations different from one which would be used to judge individuals. General Motors, with the second highest gross income (second only to the United States) in the Western Hemisphere, cannot be judged by the standards used to judge a feed-lot owner. If influential concerns insist on not being responsible to those who purchase their product and thus sustain them, then alternatives must be established which would bring them into line, into utilizing, for example, environmentally sane practices and into producing consumer-oriented products, rather than money-oriented goods. In addition, the planet cannot continue to survive with the United States having 6% of the world's population and consuming 60% of the world's resources.

The above realizations are necessary in order to combat fixed attitudes induced by the economic and social forces of wealth and influence amassed to protect vested interests in our country. These realizations not only concern environmental hazards but also the political power grid of our society, which in many cases thrives off of the indirect mis-education of many people about the ecological by-products of an uncontrolled technology.

THE ESTABLISHMENT OF ACTION GROUPS

Facing these questions, and tentatively beginning to meet them provides an excellent training ground. It has been said that if "you want to be a plumber then don't talk about it, start plumbing!" This is exactly what any environmental action group must do, regardless of the"union rules." At first, it may be an exercise in group error, but as time and experience provide seasoning, levels of expertise will develop, even for those who can only spend a small amount of time and energy. This process of education through and in action must be understood as a vital part of any action center. However, there must be a constant balance between action and reflection. Critical thought must accompany any action. For in many cases, the environmental group will find that because the causes of environmental degradation are often connected with local industry or government and because these interests have the money and power to influence the manner in which environmental regulations are enforced, the key issues, as they are carved out in conflict, will often become a primal issue of American democracy and policy. A case in point in Minnesota at the present time is that of the controversial Monticello Nuclear Power Reactor, owned by the Northern States Power Company. Recently the Pollution Control Agency of the State of Minnesota was overruled in a federal court to the effect that only the national Atomic Energy Commission could regulate the radiation output of the reactor. The State group was attempting to establish jurisdiction over all radioactive emmissions in the State. In addition, the State's regulations were over 300 times stricter than those of the federal agency. The issue is clearly one of not only state vs. federal control, (a long standing issue in itself), but also the more fuzzy one of the actual role of the federal regulatory agency, that is, whether or not it regulates or is regulated by its regulatees. It is confusing, but it is also the policy of the government.

THE STRUCTURE OF AN ENVIRONMENTAL ACTION CENTER

Most often an environmental action center will be the outgrowth of the thoughts of a few committed persons concerned either about the general state of the environment and/or consumer problems, or about a specific problem/issue to be corrected without dealing with its broader cultural and economic/ecological implications. As mentioned above, one of the fundamental tasks is to spark that understanding of wholeness, what our friends from the oriental countries would call wholistic reasoning. This means that any given problem has many facets. For example, a community thinking about building a sewage treatment plant should not just consider cost; it should consider placement, legal constraints on effluent quality, area growth, and political and social factors.

This thinking and the ecological ethics, (or land ethics) which proceeds from it, should be the cornerstone for any structure of organization. In addition, it must be remembered that the formation of an environmental action center is not a non-partisan undertaking. Such a center may not openly espouse particular political viewpoints in the traditional sense, but its own experience, if it is, in fact, effective, will lead back to certain political and cultural judgements which will have definite political overtones.

I. Beginning

A. Give yourself a name. A name provides identify, a rallying point, and a source (hopefully) of pride. Remember that a name can take on all manner of implications, however. Be careful to choose a name which has a printable acronym. For example, Scientists and Laymen against Pollution (SLAP) would not be the most desirable acronym to see picked up by the media.

B. Hold a press conference upon the formation of your group. Provide press releases as to the nature of the group, its purposes, and possible undertakings. Make sure that all media representatives are contacted.

C. Within yourselves, define your relationships to other groups, relationships within the organization, and various understandings of tactics, strategies and structure. For example, whom do you or will you claim to represent? Whom will (or will not) you take money from, if offered? Will you be a special interest group? If so, who will be your advisory group? And so on.

D. Seriously consider incorporation. If you, as a group, are against much of any structure, incorporation may seem an unnecessary hassel. However, having the status of a non-profit corporation, or foundation, at least on paper, is a point in your favor when dealing with those who would investigate your "credibility." In addition, incorporation provides the added security of protection against lawsuits, so that the individual members of the group will not be liable. A friendly lawyer will be of much aid.

E. Identify initial problem areas--research to be done, action to be taken, and volunteer for the jobs wanted. For the most part, try to work on the basis that whomever wants a particular job should be entitled to it--that the individual should fit into the action in the manner in which he or she best sees fit. The task force idea is a valid type of category for interest division. Priorities should be determined by those willing to work on them.

F. Decide upon and publicize weekly meetings. These should be held at a certain time and place each week and should be open to all who wish to attend. Secrecy can only be used against you. If you are incorporating only for financial security and the members of your corporation are voting and non-voting, you might decide that only a few people shall be voting members in order to lighten the time spent dealing with parliamentary problems, etc.

G. Be careful to leave the structure of your organization open to change. It should be recognized that, as issues change, a particular problem or issue may occupy the full-time energies of the group. However, the group must be free to alter this.

H. Recognize differences in economic analysis of the American system and particularly United States economy and growth/equatability patterns. Be able to agree on some common points of action. It will be necessary that members have at least some understandings of a closed environmental system and of the need to recycle all possible materials.

I. Remember, however, that the world of action, not just environmental action, makes no promises, and that action partners are often strange bedfellows. It is a rule of political action that economic and political principals and ideologies grow stronger the farther one is from the scene of action. In action itself, all sorts of compromises may have to be taken. There are no non-negotiable demands. There are only demands and non-demands.

STRATEGIES AND TYPES OF ACTIONS TO BE UNDERTAKEN

Any actions, strategies, or tactics undertaken in the name of the environment must come from a sense of environmental or land ethics, as mentioned earlier. As the nation embarks upon the seventies, those groups which call themselves ecology action groups have a special task to insure that the implications of environmental ethics become well known and continually explored. There are already too many contradictions in terms of our national ethics. The stock market, for example, is one of these glaring contradictions. A stock's rising price can signal our ability to degrade and misuse another portion of the earth's house. Even now, some businessmen are suggesting that there will be more need for growth in order to clean up the by-products of growth already produced. The realities of sound earth or land ethics will probably come as a relief to many who now profit from growth ethic but whose ideas are now in flux about it. Actions develop from these ethics, first in education as to the survival crisis and the cultural contradictions which are defining it, and secondly in the alternatives implemented to deter the present cultural practices.

Alternatives, at least in political action, are based on specific problems. Any specific problem may present you with a number of varying alternative solutions. Choosing which of these solutions brings up issues involving ethics. Issue orientation is a skill which must be practiced to be mastered. Almost all of us agree on certain problems. Only a few of us agree on the means to end those problems. However, it is a general rule in environmental, as well as any political action, that only a particular end justifies a particular means. In action, as Saul Alinsky puts it, "Ends and Means moralists are found on their ends without any means." Below are some representative actions which have been taken and which may serve as models for other groups:

MINNESOTA

In Minnesota, the Sierra Club planned and executed a rally against possible mining operations in the Boundary Water Canoe Area. Izaak Walton League brought suit against the mining interests.

Clear Air - Clear Water was effective in action against refineries at Pine Bend.

Citizen's groups in Minnesota have rallied effectively in defense of Carlos Avery Game Preserve, against Monticello and Prairie Island Nuclear Plants, in defense of the Nine Mile, Rice, and Minnehaha Creeks water sheds, and the St. Croix.

Save Lake Superior group has brought effective pressure to bear against taconite interests on the North Shore.

Detroit Lakes citizens brought effective action against their government for dumping sewage into Lake Sallie.

Other communities have worked in different ways:

- Red Wing established an Environmental Education Center for all citizens.

- New Hope, Brooklyn Center and Bloomington, among Minnesota cities, have established environmental or conservation commissions.

- Grand Rapids, among its many citizen's committees, includes one on the environment.

- Blaine and Albert Lea have had wide community participation in environmental fairs and seminars.

OTHER AREAS OF THE COUNTRY

I. Air Pollution:

A. In northern Illinois, a citizen, calling himself "The Fox" placed a cap on the smoke stack of a large industrial polluter.

B. Also in Illinois, an organization of businessmen called Businessmen for the Public Interest has published a series of ads in Chicago papers pointing out contradictions and hypocrisies in Commonwealth Edison's (a public utility) advertisements about how they are not a major polluter.

C. In Chicago, a citizen wrote the following letter to the president of a national grocery firm which runs a chain of local supermarkets:

> "Dear Sir: I am sending you, herewith, a number of polystyrene egg cartons in which I have bought eggs for several months. These will not disintegrate in my compost pile as the paper ones do. I do not care to send them to our incinerator for reasons that the attached clipping will explain. (Attached to the letter was an article from a chemical journal. It revealed that phosgene gas is given off when polystyrene is burned. Phosgene gas is a type of nerve gas.)

"Every day I breathe the smoke from that incinerator. The amount of phosgene gas given off, say some scientists, is inconsequential. As I recall, we used to think the same thing about the phosphates in detergents, the carbon monoxide in our car exhausts and the mercury dumped so carelessly into our waterways.

"You may have the doubtful pleasure of burning these egg cartons in Chicago. I am--at great personal cost in time, money, and convenience--going to buy my eggs in another store from now on--a store where eggs are packed in paper cartons."

D. In Montana, the Hoerner-Waldorf Corp., a paperboard and packaging company, is being sued by the citizens of Missoula, who charge that its plant there emits "noxious odors."

II. Water Pollution:

A. The 1899 Refuse Act may be utilized by any individual or group. Its enactment provides that citizens may force the federal counsel to prosecute offenders who trespass on a "public right." Such a public right is clean navigable waterways.

B. In New York, Richard Ottinger, a young congressman, has led a group in bringing legal action to block the Army Corps of Engineers from building a six-lane freeway in the Hudson River.

C. The raising level of consciousness of consumers concerning phosphate and nitrate pollution has been a plus in American environmental health. But much more can be done. For example, nitrates from chemical fertilizers sometimes leach into the local water-table and subsequently enter the bloodstream of unborn babies, combine with red blood corpuscles to produce babies born with an acute oxygen debt.

III. Transportation:

A. In both San Francisco and Boston, environmental groups have temporarily halted freeway construction, via both bodily sit-ins and through the highway department hearing procedure.

These are a few examples of types of actions which have been and can be taken in pursuit of survival. Similar models may be provided for the areas of consumer concern, noise pollution, and for almost any other category of environmental menace.

More important than providing models alone is the delineating of some effective areas of tactics which have been shown to work across all environmental problems. These are outlined below:

Individual

Many individual actions center around consumer actions, since most of our environmental hazards can be traced directly to large industry which depends on consumer approval of its actions. However, suffice it to say that what is done well individually can be done better in a group, for

two reasons. The first is that group action multiplies the effect of the individual. The second is that group action more than multiplies the effect of the individual. That is, group action provides a more visible front, a bigger act of resistance to the status quo, and such must be dealt with with more care. Environmental actions do begin at home. A list of such actions accompanies this handbook.

Corporate

Most corporate actions will inevitably revolve around certain vertices. Most vertices are: (1) court action--suits, writs of mandamus, injunctions, orders, etc.; (2) "offensive law"--that is, forcing the public regulatory agencies to take action in the public interest, which is what they were created to do in the first place; (3) lobbying to get existing environmental related laws changed--lobbying can be direct or indirect, overt or covert; (4) use of the media to alter public opinion concerning environmental or consumer related crises. Examples of these follow:

A. 1. Court action is the basis of environmental change. Action reaches from suites on the basis of the 1899 Refuse Act to various types of citizens suits and injunctions. There are three cases of class action (as opposed to personal action) in which citizens suits are likely to succeed.

a. Cases in which industry is an indirect part. This approach involves suing a government agency for failing to carry out its mandate to protect the public. If the suit succeeds, the agency in question will be forced to limit the activities of those private enterprises it is entitled to regulate.

2. Cases in which an industry infringes on a public right. Although this is a traditional form of citizen redress, new cases are expanding the concept of "public right." Numerous power companies in the U.S. are now fighting these suites

3. Cases involving action, proven damage claims.

B. Again, the regulatory agencies of our government can be responsive to public pressure if prodded to enforce the regulations which they now have for the protection of the public. The public hearing is one such occasion in which well trained scientists and lawyers, working in the public interest, can create a more sane economic and ecologically pleasing world, through the use of facts which would make interpretation of the regulations in the industry's interests much more difficult.

C. Lobbying to alter present laws provides another alternative for action. The average American has little knowledge of the political process of compromise, and the lobbying experience would not only work toward changing concrete environmental and consumer problems, but would also act as a powerful educational tool for the sophistication of those who undertake to do such.

D. Finally, the use of the media is perhaps the most important of all corporate tactics suggested here. Certainly it cannot be separated from any of them. Becoming familiar with local newspapers and magazines, with their languages, with what T.V. and radio producers and directors look for in news--all are important to those who would change entrenched cultural practices in our society. Perhaps putting together a good newspaper advertisement is one of the most crucial areas of action.

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ENVIRONMENTAL INFORMATION

SOURCE GUIDE AND BIBLIOGRAPHY

Prepared by:

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ENVIRONMENTAL INFORMATION

SOURCE GUIDE AND BIBLIOGRAPHY

The Minnesota Environmental Sciences Foundation, Inc. receives an extraordinary number of inquiries from concerned citizens, teachers and students seeking information on environmental problems. In an attempt to respond to these requests, we have put together the following bibliography of free or inexpensive materials available from various businesses, industries, organizations and agencies concerned in one way or another with problems of air and water pollution, wildlife preservation, population control, etc.

The first section of the Guide, pp. 2-17, consists of materials compiled as of March, 1970. Since then a number of items have come to our attention, and these are included in the updated section, pp. 18-25. The bibliography is by no means complete, and we have not attempted to review or evaluate the materials included.

Copies of the items listed are distributed mainly on a single request basis, and unless otherwise noted, they are free of charge. Direct your order and remittance, if any, to the source listed. If you are a teacher, please usethe bibliography on an individual rather than a classroom basis.

We hope you will find the Guide useful, and that you will want to dig deeper into the nature of the environmental crisis and the things tht can be and are being done about it.

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In some cases, the list of publications available from a single source was so lengthy that it became more practical to direct you to the bibliography of the source itself, as follows:

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Agricultural Extension Service
Bulletin Room, 3 Coffey Hall
University of Minnesota
St. Paul, Minnesota 55101

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American Camping Association
c/o Lyle Johnson
5804 Stewart Avenue
Minneapolis, Minnesota 55424

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American Petroleum Institute
1271 Avenue of the Americas
New York, New York 10020

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Bureau of Land Management
Box 2237
Boise, Idaho

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Committee for Environmental Education
438 North Skinker Boulevard
St. Louis, Missouri 63130

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Department of Administration Publications
Central Services Division
Documents Section
Room 140, Centennial Building
St.Paul, Minn. 55101

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Environmental Science Center
5400 Glenwood Avenue
Minneapolis, Minn. 55422

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Lorado Taft Field Campus
Northern Illinois University
Oregon, Illinois 61061

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Metropolitan Council
Capitol Square Building
Cedar at 10th Street
St.Paul, Minn. 55101

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Minneapolis Bird Club
c/o Mrs. Myrna Kuam
6045 Logan Avenue South
Minneapolis, Minn.

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Minnesota Department of Conservation
Bureau of Education and Information
Centennial Office Building
St.Paul, Minn 55101

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1130 Fifth Avenue
New York, New York 10028

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1412 Sixteenth Street, N. W.
Washington, D. C. 20036

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223 Walker Building
803 Hennepin Avenue
Minneapolis, Minnesota 55403

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1010 Sixteenth Street, N. W.
Washington, D. C. 20036

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U. S. Government Printing Office
Washington, D. C. 20402

1) The Government is an invaluable source of information. Some of its publications are included in our bibliography. To obtain a more complete and current list, write to the Superintendent of Documents and ask to be put on the mailing list for "Selected U. S. Government Publications" (issued biweekly).

2) "List of Publications on Conservation and Related Department of the Interior Subjects"

In addition, your Public Library should have monthly and/or annual issues of the following:

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314 Clifton Avenue
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Federal Building
Fort Snelling
Minneapolis, Minnesota 55111

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6045 Logan Avenue South
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381 Park Avenue South
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Minneapolis, Minnesota 55404

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Scientists' Institute for Public Information
30 East 68th Street
New York, New York 10021

The SIPI has prepared a series of workbooks addressed to social issues engendered by the environmental crisis. These workbooks will provide basic information, list a few additional sources, and stress the role of scientific and technical information in evaluating and solving environmental problems. The books are expected to be ready in the spring, 1970 at the following prices (No billing for orders under $10.00--Please enclose a check or money order.)

Each title = $1.00
For individuals and non-profit organizations
10-99 = 75¢ @
100 or more = 50¢ @
Campus offer, 1000 or more = 30¢ @
All eight titles (one set) = $5.00

Titles are as follows

1) "Air Pollution"

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Box 1346
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Eastern Montana College
Billings, Montana 59101

Note: The following items are distributed through Interstate Printers and Publishers, Inc , 19 Jackson, Danville, Illinois, 61832:

1) "Conservation Education: A Selected Bibliography," compiled by Joan Carvajal and Martha Munzer

2) "Evaluating a Program of Conservation Education in the Elementary School"

3) "Important Characteristics of a Good Local Program"

4) "Twenty-Five Key Guides for Preparing Conservation Education Publications and Visual Aids"

The Conservation Foundation
1250 Connecticut Avenue, N. W.
Washington, D. C. 20036

1) "Pollution by Pesticides" 50¢

2) "The College, the Community and Conservation" $1.00

3) "America the Beautiful," an address by Russell E. Train, President of the Foundation

4) "Challenge to Youth"

5) "The Unity of Ecology," by Dr. F. Fraser Darling

6) "The Park Idea and Ecological Reality," by Dr. F. Fraser Darling

7) "Development and Conservation Can Coexist (Reprint from Environmental Science and Technology

Consumer Protection and Environmental Health Service
Public Health Service
U. S. Department of Health, Education and Welfare
Washington, D. C. 20204

1) "The Role of the Physician in our Changing Environment"

2) "A Humane Society or Environmental Chaos"

3) "The Environment and Health Planning"

4) "Occupational Health--New Approaches to Old Problems"

5) "Clean Air Act as Amended (Highlights)"

Federal Water Pollution Control Administration
U. S. Department of the Interior
Washington, D. C. 20242

1) "Heat Can Hurt"

2) "Mine Acids"

3) "Water Quality Standards"

4) "Estuaries--Cradles or Graves"

5) "Federal Water Pollution Control Act/Oil Pollution Act"

6) "A Primer on Waste Water Treatment"

7) "Focus on Clean Water"

Holt, Rinehart and Winston, Inc.
430 Allwood Road
Clifton, New Jersey 07012

1) "Scientific Experiments in Environmental Pollution," Elbert C. Weaver, ed. $1.08

Manufacturing Chemists Association
1825 Connecticut Avenue, N. W.
Washington, D. C. 20009

1) "Food Additives--What They Are/How They Are Used"

2) "Food Science--Today and Tomorrow," by W. J. Darby, M. D. and Gwen Lam

3) Everyday Facts about Food Additives"

4) "Everyday Facts about Good Water

Metropolitan Council
Capitol Square Building
Cedar at 10th
St. Paul, Minnesota 55101

1) "A Proposal to Save Open Space in the Twin Cities Metropolitan Area"

2) "A Zoo for the Twin Cities Metropolitan Area"

3) "Proposals for Preserving a Metropolitan Open Space System" (Report of Open Space Advisory Committee, January 1969)

4) "A Proposal for a Twin Cities Area Metropolitan Area Zoological Garden" (Report of Metropolitan Zoo Advisory Committee, May, 1968)

Minnesota Department of Conservation
Bureau of Information and Education
Centennial Office Building
St. Paul, Minnesota 55101

1) "A Deer Management Program for Minnesota' (Division of Game and Fish publication, February, 1969)

Minnesota Environmental Sciences Foundation, Inc.
5400 Glenwood Avenue
Minneapolis, Minnesota 55422

1) "Environmental Action"

Note: This handbook is also available through Farmers and Mechanics Savings Bank of Minneapolis, 90 South Sixth St.

NASCO
Nature Study Aids
Fort Atkinson, Wisconsin 53538

1) "Discovering Your Environment," by Myron Chase $1.00

2) "Conservation Education Lessons" 65¢

National Center for Air Pollution Control
Public Health Service
Department of Health, Education, and Welfare
Washington, D. C. 20201

1) "Air Pollution: Where Are We Going?"

2) "Air Quality Criteria for Photochemical Oxidants, Summary and Conclusions"

3) "Air Quality Criteria for Carbon Monoxide, Summary and Conclusions"

4) "Air Quality Criteria for Hydrocarbons, Summary and Conclusions"

Note: Items 5-11 are distributed through the Superintendent of Documents, U. S. Government Printing Office, Washington D. C. 20402, for the price listed:

5) "Today and Tomorrow in Air Pollution" (Public Health Bulletin 1555) 35¢

6) "Clean Air for Your Community" (Public Health Bulletin 1544) 25¢

7) "Sources of Air Pollution and Their Control (Public Health Bulletin 1548) 40¢

8) "Message on Environment from the President of the United States" (House of Representatives, Document #91-225)

9) "National Emission Standards Study" (Senate, Document # 91-63)

10) "Progress in the Prevention and Control of Air Pollution" (Senate, Document #91-64) 25¢

11) "The Cost of Clean Air" (Senate, Document #91-65) 45¢

National Wildlife Federation
1412 Sixteenth Street, N. W.
Washington, D. C. 20036

1) "Conservation Directory" (A comprehensive listing of conservation organizations)

Resources for the Future
1755 Massachusetts Avenue, N. W.
Washington, D. C. 20036

1) "1969 Annual Report"

2) "Some Highlights of 1967"

3) "Some Highlights of 1968"

4) "Some Highlights of 1969"

5) "What Is Conservation?" by Orris C. Herfindahl (Reprint from Three Studies in Minerals Economics)

6) "Factors and Forces Affecting the Optimum Rural Settlement Pattern in the United States," by Marion Clawson (Reprint from Economic Geography)

7) "Approaches to Regional Water Quality Management," by Allen V. Kneese

8) "The Outlook for Energy Resources in the United States," by Sam H. Schurr (Reprint from Natural Gas, Coal, Ground Water)

9) "The U. S. Resource Outlook: Quantity and Quality," by Hans Landsbert (Reprint from Daedalus)

10) "Economics and the Quality of the Environment--Some Empirical Experiences," by Allen V. Kneese (Reprint from Social Sciences and the Environment)

11) "Production, Consumption, and Externatlities," by Allen V. Kneese and Robert U. Ayres (Reprint from American Economic Review)

Soil Conservation Service
U. S. Department of Agriculture

Note: Both of the following pamphlets are distributed through the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

1) "Our American Land" (Agriculture Information Bulletin #321) 20¢

2) "Sediment" (Agriculture Information Bulletin #325) 15¢

Urban Institute
2100 M Street, N. W.
Washington, D. C. 20037

"Report on Relation of Federal Government to Quality of Environment," by Elizabeth Haskell $2.00

The Wilderness Society
729 15th Street, N. W.
Washington, D. C. 20005

1) "New Challenges for Wilderness Conservationists," by Stewart M. Brandborg

Wildlife Management Institute
Wire Building
Washington, D. C. 20005

1) "The Farmer and Wildlife"

Winchester Western
Conservation Department
East Alton, Illinois

1) "Principles of Game Management"

2) "For the Young Hunter"

3) "Careers in Wildlife Conservation"

Wisconsin Department of Natural Resources
Madison, Wisconsin 53701

1) "Quest for Clean Waters"

Zero Population Growth, Inc.
367 State Street
Los Altos, California 94022

1) "The Population Explosion: Facts and Fiction," by Paul Ehrlich

2) "Overpopulated America," by Wayne H. Davis (Reprint from the New Republic)